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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,099	01/08/2001	Michael Geva	GEVA 6-2-4-21	6929

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EXAMINER

WANG, GEORGE Y

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/757,099

Applicant(s)

GEVA ET AL.

Examiner

George Y. Wang

Art Unit

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PW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (U.S. Patent No. 4,546,480, from hereinafter "Burnham") in view of Beernink et al. (U.S. Patent No. 5,708,674, from hereinafter "Beernink").

Burnham discloses an electronic device and method of making an electronic device having an active region (fig. 4, ref. 38) located over a substrate (fig. 4, ref. 32). Burnham teaches an undoped layer with a barrier region made up of a number of

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barrier layers between a plurality of undoped layers (col. 5, lines 48-56) that does not form a portion of the active region.

However, the reference fails to specifically disclose that the active layer is under the barrier layer.

Beernink discloses an electronic device having an active layer (fig. 3, ref. 13) situated beneath a barrier layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have disposed the active layer beneath the barrier layer since one would be motivated to create a device with minimal layers (col. 2, lines 30-35). By preventing unwanted layers, fabrication would not only be more cost effective and more readily manufactured, it would prevent unwanted introductions of impurity. This would ultimately enhance reliability and minimize accompanying drawbacks (col. 3, lines 1-4).

3. Claims 2-8 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham and Beernink in view of DePoorter (WO 97/50133).

Burnham discloses an electronic device and method of making an electronic device having an active region (fig. 4, ref. 36) located over a substrate (fig. 4, ref. 32). Burnham teaches an undoped layer with a barrier region made up of a number of barrier layers between a plurality of undoped layers (col. 5, lines 48-56). Furthermore, the reference discloses barrier layers composed of aluminum arsenide with 5-50% aluminum composition (col. 5, lines 48-56), and having a thickness of about 1 nm and where the undoped layers each have a thickness of about 10 nm (col. 1, lines 23-34).

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The Burnham reference also teaches that there are no p-n junctions between the barrier and doped cladding.

Although the reference teaches a doped upper cladding (fig. 4, ref. 41), Burnham does not disclose it as being doped with zinc. Furthermore, the reference does not specifically teach the barrier region inhibiting the diffusion of zinc into the active region.

DePoorter discloses a semiconductor diode with an upper cladding doped with zinc (abstract). Furthermore, the reference teaches a barrier region that inhibits the diffusion of zinc into the active region (pg. 3, lines 21-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have doped the upper cladding with zinc and to construct zinc-inhibitive properties to the barrier layers since one would be motivated to alternatively have a high and low bandgap value (pg. 3, lines 21-35). Such values render the barrier layers highly effective and reliable in practice since zinc-inhibition in the layers encourage highly thin layers that have mechanical stress without the defects caused by degradation of charged ions, such as zinc atoms (pg. 3, lines 21-35).

### ***Response to Arguments***

4. Applicant's arguments filed December 29, 2003 have been fully considered but they are not persuasive.

Applicant amends Claim 1 and 9 to include the limitation that the barrier layer "does not form a portion of the active region." Applicant argues that the prior art references, particularly the Burnham reference, do not teach this limitation. Applicant

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asserts that the barrier region cited in the Burnham reference is not a barrier region because Burnham refers to them as "active layers." While Burnham may call them "active layers," Examiner points to the fact that nothing in Applicant's claims distinguish their barrier layers with the active layers of the Burnham reference. In fact, they appear to be made of the same materials consisting of aluminum composite and the Burnham reference also clearly distinguishes a separate "active region" (fig. 4, ref. 38). As such, Examiner notes that Applicant's amendment and argument does nothing to distinguish the claimed invention from the prior art references since the Burnham reference clearly teaches the same structures as that claimed by Applicant.

Furthermore, Examiner emphasizes that the Beernink reference is not intended to provide teaching on adding missing components to the Burnham reference.

Burnham is sufficient in teaching all the relevant components claimed by Applicant.

What the Beernink reference is used for, rather, is the motivation to switch the parts as provided in Burnham so that the barrier region is positioned above the active region.

Therefore, Applicant's arguments with regard to Beernink are also unpersuasive.

Thus, Examiner holds to the validity of the references used and maintains rejection.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

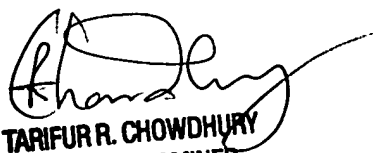
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gw

March 30, 2004



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER